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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,868	07/14/2003	Kenji Shimizu	Q71312	3827
23373	7590	04/19/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			RICKMAN, HOLLY C	
			ART UNIT	PAPER NUMBER
			1773	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/617,868

Applicant(s)

SHIMIZU ET AL.

Examiner

Holly Rickman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-8 and 10-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3, 5-8, 10-14 is/are allowed.
- 6) ☒ Claim(s) 15-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Allowable Subject Matter

1. The allowability of claim 8 based upon the recitation of an amorphous orientation control layer has been reconsidered. Rejections of newly presented claims combining the features of previously presented claims 1 and 8 are set forth below. The examiner apologizes for the inconvenience.

2. Claims 1-3, 5-8, 10-14 are allowable over the closest prior art to Futamoto et al. Futamoto et al. teach a CoCr intermediate layer having an M_s value within the claimed range. The prior art fails to teach or suggest a motivation to substitute a CoCrPtB *having an M_s value as claimed.*

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The rejection of claims 1-3, 5, 7, and 9-11 under 35 U.S.C. 102(b) as being anticipated by Futamoto et al. (US 6403203) is withdrawn in view of Applicant's amendments.

Claim Rejections - 35 USC § 103

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The rejection of claim 6 under 35 U.S.C. 103(a) as being unpatentable over Futamoto et al. (US 6403203) is withdrawn in view of Applicant's amendments.

7. Claims 15-21, 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Futamoto et al. (US 6403203).

Futamoto et al. disclose a magnetic recording medium having an underlayer comprising a first underlayer formed from TiCr and a second underlayer formed from CoCr having an Ms value of 100 emu/cc or less, a perpendicular magnetic recording layer and a protective overcoat. The reference also teaches the use of a soft magnetic layer between the substrate and the underlayer. See col. 1, lines 10-13; col. 5, lines 45-60; col. 6, lines 11-16; col. 11, lines 30-59).

While the reference does not explicitly state that the TiCr layer is amorphous, it is the examiner's contention that TiCr is a well known alloy and is known to be amorphous or crystalline based on the relative concentrations of the two elements. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to choose to use an amorphous TiCr alloy for the first underlayer taught by Futamoto et al. based upon the desired crystalline structure and orientation of the magnetic recording film.

With respect to claim 20, it is noted that the claimed range of "equal or less than 1 nm" encompasses an embodiment in which the "initial growth portion of the intermediate film" has a

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thickness of zero. Futamoto et al. discloses at least this embodiment wherein the initial growth portion has a thickness of zero and thus, is not present.

Futamoto et al. fail to disclose the limitation directed to a Cr content of equal to or less than 34 at%. The reference does disclose several examples using 35 at% Cr and indicates that Ms should be 100 emu/cc or less. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to determine the optimal amount of Cr to use in the CoCr intermediate layer in order to achieve a Ms value within the desired parameters. Furthermore, there does not appear to be any distinction in the properties of the article, the numbers are so close, they appear to overlap. In any event these values would be minor obvious variations and expected to have the same properties. *See Titanium Metals Corporation vs Banner*, 778 F. d. 775, 227 USPQ 773 (Fed. Cir. 1985).

8. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Futamoto et al. (US 6403203) in view of Akiyama et al.

Futamoto teaches all of the limitations of the claims except for the use of a longitudinal magnetic layer beneath the soft magnetic layer.

Akiyama et al. teaches that it is known in the art to use a longitudinal hard magnetic biasing layer beneath a soft magnetic layer in order to suppress Barkhausen noise arising from shifting domain walls in the soft magnetic layer (see col. 10, lines 4-31 Brief summary section).

It would have been obvious to one of ordinary skill in the art at the time of invention to add a longitudinal biasing layer as taught by Akiyama et al. to the structure taught by Futamoto et al. in order to suppress Barkhausen noise.

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Response to Arguments

9. Applicant's arguments with respect to the newly added claims have been considered but are moot in view of the new ground(s) of rejection.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (571) 272-1514. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Holly Rickman
Primary Examiner
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April 18, 2005